

# WHY LITTLE CHILDREN DIE.

## A LECTURE

BY H. H. VERNON, M.D.,

*Medical Officer of Health, Southport.*

---

OF all the various questions which interest a professional sanitarian there is perhaps not one in which he has more right to expect the interest, the help, and the sympathy of the public than in this question, which is constantly forcing itself on his attention, "Why do so many little children die?" In his search for the causes of the terrible destruction of infant life, which is one of the most pressing questions of the day, he may not perhaps call for more than sympathy, but when he comes to devising remedies adequate to the removal of these causes, he requires not only sympathy but active and ready help.

Now the object of this evening's address is to fix your attention on certain facts which are shocking, to arouse your interest, to enlist your sympathies, and to induce you to help earnestly and persistently in doing something to remove the stigma which rests upon so many city populations of, I will not say actively killing, but, allowing, so many of the recruits who join the army of humanity to die prematurely, painfully, unnecessarily, and discredibly.

I know of no people, and I have lived all over England pretty nearly, who are more instinct with home affections than the Lancashire people, and especially the Manchester people. The vernacular language of the county is rich in familiar terms, which demonstrate plainly the hold which domestic ideas have upon the mass of the people. Whether it is a tender lyric, descriptive of fireside pleasures, or some quaint turn of speech which reveals the strong and abiding sense of a mutual property in each other, which characterises the Lancashire family, it is all the same. The general habit, the common speech, and the popular poetry,

all attest that Lancashire people are a home-loving and a child-loving people.

The knowledge of this encourages me to think that it is only necessary to disclose to you the facts concerning infant mortality to secure the active co-operation of the great bulk of those among you who are fathers and mothers. This is not a mere philanthropist's question, nor a mere question of statistical curiosities—it is above all a parents' question. Moreover, it is especially a working man's question, for I shall show you presently that the classes above the weekly-wage class are not thinned out by infant mortality as the working classes are—that in fact the working classes bear the weight of the burden in this matter, just as they do in the mortality from contagious diseases, trade diseases, and accident.

I wish also to impress upon you the undoubted fact that the working classes are, if they so will it, masters of the situation in regard to sanitary matters. Having once realised the fact that your children die much faster than they ought to die, and having honestly done your own share of what needs doing to remedy it—which I sincerely hope and believe you will do as soon as you have realised the fact—you have the power to insist that municipal authorities shall do their duty also. Every first day of November you are not only A power but you are THE power, whose will is irresistible. You can put into the city council whom you like. Not all the tricks of "wire-pullers," nor all the combinations of those who are interested in the maintenance of sanitary abuses, can defeat you, if you are true to yourselves and united in the determination that none shall go into the local parliament except those who will see that sound houses are built on clean sites, that your houses are properly drained and ventilated, that your refuse is diligently cleared away, that your water supply is abundant and pure, that furnaces shall consume their own smoke, that noxious trades shall be duly regulated, that in short your earth, air, and water shall be as clean and pure as in the nature of things they can be. Do not misunderstand me. I am not finding fault with your city council. I believe it has done and is doing a great sanitary work. I am only reminding you, and through you all working-class ratepayers of other towns, that you are the real masters, and that if you are wise enough not to be led away by party cries, which have nothing whatever to do with municipal affairs, and which are often put forward for the express purpose of distracting your attention from the local questions which concern you as burgesses, you can impress your own will and

your own ideas upon the municipal body. You can utterly rout and abolish the whole body of jerry builders and speculators in cottage property, who are the vampires of town life, and whose nominees are a power for evil in too many of our town councils, if it so pleases you. But you must take the motes out of your own eyes before you pluck the beams out of even the jerry builders' eyes. You must live clean lives in clean houses when you demand houses of sound fabric with wholesome sanitary arrangements; and by clean lives I imply moral as well as physical cleanliness, for the two necessarily go together. Cleanliness is not only next to godliness; it is its companion, and its outward and visible sign.

I said, just now, that I would call your attention to some facts which are shocking. The subject we are engaged upon to-night is full of painful interest. Let us try to understand it better by the aid of a few figures. I will not lead you a dance through a bewildering array of statistics, but I must ask you to thoroughly take in and digest the few I put before you, because unless you do you will not realise the actual state of the case. Before I tell you "why little children die," I must show you that they do actually die in undue numbers, that it is by no means one of the eternal decrees of Providence that they should melt away out of our midst like dew before the morning sun, that the mortality amongst them is very amenable to controllable circumstances, and that a fatalistic acquiescence in their decimation, twice over, is as indefensible on scientific grounds as it is reprehensible on moral grounds.

In the last census year (1871) 797,428 births were registered in England and Wales. In the same year 125,868 children under one year of age died. It is, of course, almost impossible to get a mathematically correct proportion of persons dying at any given age to those living at that age. The longer the period for which the calculation is made the more correct it will be, and the shorter the period the less correct. The method we pursue, therefore, though not pretending to be capable of displaying the ratios of infant mortality with mathematical exactitude, is, nevertheless, not open to some of the objections which may be urged against the more theoretically exact, but more difficult method of comparing the deaths at a given (very limited) period of life with the persons living at that period. And the method we use is this: We compare the deaths under one year of age, in any given year, with the births in that year; or sometimes with the births of the year immediately precedent. If we were constructing a set of tables

for life insurance we should not take so rough-and-ready a method. But our object is not to estimate the expectation of life at shortly recurring stages of existence, so as to value it from a money point of view, but simply to get an index, not an exact measure, of the rate of infant mortality, in order that we may see what it averages—where it is low, and where it is high. We may not and we ought not to be satisfied with average rates, because an average implies something better, which we ought to desire. Even low rates of mortality do not exclude the possibility and hope of still lower, while high rates show that there is a great waste going on, that there are discoverable and remediable conditions existent which cause the waste, and that there is work waiting for the sanitarian and the philanthropist. Now, if you compare the 125,868 deaths of children under one year of age in England and Wales in 1871 with the births in the same year—797,428 in number—you will see that the proportion is 158 deaths under one year of age to 1,000 births in the same year. This, then, was the infant mortality throughout the country for that year. In some years it is more than 158 per 1,000; in some years it is less. In some places in England and Wales, in 1871, it was much more, in some much less. Among certain classes it is nearly always much, very much, more; in other classes it is invariably very much less. But take place with place, and class with class, and strike an average, and 158 deaths of infants to 1,000 births was the proportionate number in 1871. There is a fluctuation from year to year, but this variation is too small to draw our attention away from the very much larger variations which I shall now ask you to consider. It may be remarked, however, in passing, that infant mortality has diminished slightly since the years between 1838 and 1854, for in those seventeen years the proportion of deaths under one year of age to children born alive was rather over 165 per 1,000. The diminution is not great, but it is worth something, too, for it represents a saving in 1871 of 6,000 infant lives, which would have been lost if the rate of mortality between the years 1838 and 1854 had been maintained in 1871. Who will presume to say that the lives of 6,000 innocents are nothing in the sight of God, nothing to the mothers who bear them, nothing to the fathers who gladly toil for them, and nothing to the nation which possesses them? Timorous philosophers may mistrustfully scrutinise the relations between population and the means of subsistence, and exult over a diminution in the rate of increase, but I cannot forget that the blessing pronounced upon Abraham was this: “I will multiply thy seed as the stars of heaven, and as the sand which



is on the seashore." It was the teeming North, with its aggressive multitudes, which overran the greatest empire the world ever saw ; and the Roman historian, long before the final catastrophe, looked with prescient dread upon this productive region, which he called "the workshop of nations." It is the rapidly multiplying Teuton who has predominated over the comparatively barren Gaul, and the prolific Slav who has overborne the unproductive Turk ; and it is the still more prolific Anglo-Saxon who has, within modern times, overrun and Anglicised two continents. Whether it be in the contest of man with man, or man with the forces of Nature, Providence is still on the side of "the big battalions." Away, then, with the cowardly sciolism which pretends to see a compensation and an adjustment in death and disease !

Now we have got as far as this in our statistics. In the seventeen years ending 1854 the mortality among infants, computed in the way I have described to you, was 165 per 1,000 throughout England and Wales. In 1871 it was 158 per 1,000. Let us now look for some of the places and people amongst whom it has been very much less.

In 1859 Dr. Farr, of the Registrar-General's Office, constructed what has been called "The Healthy District Life Table." It was compiled from observations taken over five years ending 1853, in 63 registration districts, where the death-rate at all ages, taken together, was not more than 17 per 1,000 per annum. He found that the infant mortality in these districts was only 103 per 1,000. Here is an enormous difference. Suppose that this rate had prevailed all over England and Wales in 1871, instead of the rate which did prevail, what would have been the saving of infant life in that year ? No less than 43,858 ! Imagine this saving maintained for ten years, and proportionately influencing the mortality of each succeeding year of life, as it could not but do ; and think what an effect it would have upon the population returns ! The sacrifice to unhealthy local conditions, then, in 1871 was a number of infants equal to the population of a town as large as Ashton-under-Lyne at least ; and this is without any picking of classes. These districts contained high and low, rich and poor. Neither was there actually a preponderance of rich people. These 63 healthy districts were essentially rural districts, in which the labouring classes much more exceeded the upper classes than they do in towns or in the country at large. It is obvious, then, that it is not one of the irreversible decrees of Providence that children in England should die at the rate of 158 per 1,000 in the

first year of life, nor that the children of the working classes should do so.

Indeed, this favourable rate of mortality—which is, as we shall presently see, thrown into the shade by the infant mortality of the upper classes—is very little exceeded in some whole counties. In Dorsetshire, for instance, there were 5,747 births in 1871, and 624 deaths of children under one year of age. This represents an infant mortality of only 108 per 1,000. The saving in this county, if maintained throughout the country, would have given us 39,871 more children in 1871, and represents a saving in the little county of Dorsetshire alone of about 290 infant lives in one year!

In the year 1874 Mr. Charles Ansell, the Actuary of the National Life Assurance Society, published the results of an inquiry into the mortality of the upper and professional classes. Amongst many other interesting and important results, he ascertained that for every 1,000 children born alive in any year amongst the classes in question, 80.5 children under one year of age died. Now you see we have a descending scale in our hands. In the 17 years ending 1854 an infant mortality of 165 per 1,000 per annum. In the year 1871, 158 per 1,000. In the county of Dorsetshire, in the year 1871, 108 per 1,000. In 63 healthy districts, where the death-rate did not exceed 17 per 1,000 at all ages for five years ending 1853, 103 per 1,000. Among the upper and professional classes 80.5 per 1,000. Now if this last low rate of infant mortality had been maintained throughout England and Wales in the year 1871, how many innocent lives would have been spared, think you? Why 61,800! Supposing this had gone on in the same ratio up to December 31st, 1877, how many lives does that represent, including the census year 1871? No less a number than 432,600, and in 10 years 618,000! Figure to yourselves, 618,000 babes put safely through the perils of the first year of life into the safer second year, in which the mortality is barely a third of that in the first. And think how much sorrow, suffering, and disappointment saved this would represent; and remember, also, that for every dead child in the battle of life there are many wounded and maimed, and much injury done to the vigour of the stock. In order that you may see the enormous advantage to the expectation of life by keeping your children out of the list of killed, I have drawn up a table which shows how rapidly the list dwindles down as life goes on. This table is not mathematically exact, but it is near enough to illustrate the enormous increase in the expectation of life, or,

more correctly, the vast decrease of the probability of dying, which accrues to a child from month to month as it holds on to life. Thus, of 1,000 children born alive, you see three times as many die in the first year as in the second, nearly seven times as many as in the third, more than ten times as many as in the fourth, and between thirteen and fourteen times as many as in the fifth year of life; so that nature herself rewards you threefold, sevenfold, and tenfold, for your care of infant life as time rolls on.\*

We must now, however, turn to a very much darker page in the account of infant mortality. In Lancashire, in the year 1871, 108,441 births were registered. There were 20,687 deaths of children under one year of age in the same year. The deaths per 1,000 births of infants in Lancashire were in 1871 therefore 190. Remember that the average of the country in that year was 158. In this case, unfortunately, it is waste and loss only which we have to estimate. The excessive mortality in Lancashire in 1871 among infants amounted to 3,470 over the average of the whole country. But I have shown you something much better even among working-class people than the English average. Considered with reference to the healthy districts infant mortality, the waste of infant lives in this county in 1871 was equal to 9,434 lives. To put the thing in another way, nearly twice as many children under one year of age died in Lancashire, in proportion to the births, as in Dorsetshire and the selected healthy districts, which are essentially inhabited by a working-class population. "Thus bad begins and worse remains behind." Are you contented that this is so? Are you satisfied that Lancashire infants should die nearly twice as fast as Dorsetshire infants? I am not; and I hope and believe you are not.

We will now come a little nearer home. In Manchester, in the year 1871, 9,739 children were born alive. In the same year 2,075 infants died. The proportion of deaths of infants to births was therefore 213 per 1,000! You see we are creeping up in a very ugly way. The waste of infant life in Manchester, as compared with the rates for the whole of England and Wales, amounted to 535 children under one year of age. If you compare the Manchester mortality with the healthy districts mortality, the waste amounted to 10,70 lives. I ask again, are you satisfied with this state of things, or with anything approximating to it?

But there are worse places than Manchester. I don't know that this is much consolation, but such as it is you have it. In

\* ENGLISH LIFE, 1871.—Born alive, 1,000; died in first year, 158; second year, 1; third year, 23'5; fourth year, 15; fifth year, 11'6.

Leicester, in 1871, there were 3,946 births, and in the same year there were 957 deaths of children under one year of age in that town. Consequently the deaths of infants were 242 per 1,000 of the births! This is surely very shocking! The waste of infant life, taking the average infant mortality of the country as a standard, was in one year 331 lives; or if we take the healthy districts as a standard, then the waste was 548 infant lives.

Liverpool is a worse case still. In 1871, 8,288 children were born in Liverpool, and 2,075 deaths of children under one year of age occurred. This shows a proportion of 246 deaths of infants to 1,000 births. Within a small fraction, not worth naming, this means that whereas in the healthy districts of England about one in ten of all the children born dies before coming to one year of age, in Liverpool, in 1871, about one in four died. This truly is a frightful circumstance, shocking to every sentiment of humanity, and calling aloud to heaven for redress! Here were 730 lives wasted over the average of the country at large, or 1,185 over the standard of the healthy districts mortality in one year in one town.

I will now recapitulate the whole sliding scale of infant mortality as I have given it you, beginning, however, at the lowest—that is to say the most favourable—end of the scale, so that you may see the enormous range of it—a range so great that the highest rate of mortality is more than three times that of the lowest. I dismiss fractions, and give you only the round numbers:—

Upper classes and professional classes...	80	per 1,000 births.
Healthy districts .....	103	”
Dorsetshire (1871) .....	108	”
England and Wales (1871) .....	158	”
England & Wales (17 yrs. ending 1854) .....	165	”
Lancashire (1871) .....	190	”
Manchester (1871) .....	213	”
Leicester (1871) .....	242	”
Liverpool (1871) .....	246	”

Now, what I wish to impress upon you is that a range of this wide character is in itself a proof that the higher terms in the progressive augmentation are not irremediable. It is not an inevitable consequence of the massing together of population in towns that 246 per 1,000 of the children born in a year should die in that year. In London, which is the most populous city in Europe, if not in the whole world, the rate of infant mortality in 1875 was only 162 per 1,000. If 162 children under one year of age die for every 246 in Liverpool, it is obvious that mere aggre-



gation in cities is not by any means the only cause of high rates of infant mortality, nor one which necessarily expresses itself in such portentous and shocking figures. It is true that the infant mortality of London is higher than the average of the country at large, but it is much lower than that of the great provincial towns. These average about 190 deaths of infants to 1,000 births. There must, therefore, be other circumstances over and above mere massing together in towns which cause the excess of infant mortality in Liverpool, Dublin, Birmingham, Manchester, Leicester, Hull, Sheffield, Salford, and half-a-score other towns, over the infant mortality of London. It is evidently not mere aggregation of people, for if that were so the greater the aggregation the greater the mortality would be, and we find that it is *not* so. It is quite unnecessary, therefore, to sit down and acquiesce, in the spirit of a fatalist, in the exorbitant infant mortality of our towns, for we find that it does not necessarily increase as they increase in population; nay, we can point to one town of 130,000 inhabitants where the infant mortality for years has been below the average of the whole country. I refer to Portsmouth, where the average of several years has been only 143 per 1,000 births, or 15 per 1,000 below the general rate of England and Wales in 1871. I should like to find a Lancashire or Yorkshire town of equal size where the mortality of infants is anything like so low.

Let us see, now, whether social position is a *necessary* element in the case. Some people say, "Oh, yes, of course, the infant mortality is high at such and such a place. It is essentially a working-class population. The infant mortality amongst such a class is always so." But, then, it is not *always* so. In a great measure it is so—more often than not. But there ~~are~~ some notable exceptions, and the largest exception is furnished by "The Healthy Districts Mortality Table," which is a table essentially of mortality among people of the labouring class. Their infant mortality is, as you may remember, only 103 per 1,000 births. It is plain, then, that Providence has established no law that working-class children shall wither away simply because they are working-class children. I quoted to you the infant mortality of certain upper classes, which was low, but I can tell you of a mortality among infants much lower than that, and among working-class people to boot. In the parish of Harbottle, in Northumberland, which in 1874 contained a population of somewhat less than 200 persons, not a single child had died for twenty years before that date. The number of children born during that period would be about 140, and none of them died—not one!

The Liverpool rate would have carried off 34 of them in the first year of their lives, not to mention the second, third, fourth, and fifth years. Even among the most favourably situated upper-class population amongst whom observations have been made, 11 would have died in their first year. But among these village shepherds and farm labourers of the humblest class not one died. No one, after this, must tell us that a high rate of infant mortality amongst the working classes is a necessary adjunct of their social circumstances. I agree rather with Dr. Sutton, of Oldham, who infers from the facts at Harbottle that all infant mortality is unnatural. I don't go so far as to say that we can ever expect to see such cases as the Harbottle case either frequently repeated or on a large scale. Such an expectation would be Utopian. But I do say that such a case, taken in conjunction with the other favourable rates of infant mortality I have laid before you, incontrovertibly proves—

1. That a terrible waste of infant life is going on amongst us.
2. That it is not the necessary concomitant of class conditions.
3. That it is not the necessary concomitant of aggregation of population in large numbers.
4. That it is due to causes which are not *necessities* of any social condition, but are discoverable and remediable.
5. That experience on a large scale has shown that infant mortality is practically reducible to about 100 per 1,000 births, or to 10 per cent.
6. That it is, therefore, our duty, as sanitarians, as citizens, and as parents above all, not to rest until we have brought the infant mortality of the whole country down to this reasonable and feasible standard.

Before we go on to consider the reasons why an excessive number of infants die, I wish to say a few words as to the effect of this mortality upon those who survive. An attempt has been made by some rather ultra-philosophical sanitarians to represent these dead innocents as victims offered up for the good of the human race. These gentlemen are fond of the phrase "Checks upon population." They tell us, with a lofty disregard of the painful details of the case, that "the individual perishes, but the race flourishes." They talk about "compensations," "natural selection," and "the survival of the fittest." Now, with regard to what may be called the preventible diseases, or what are commonly spoken of as such, a distinct proportion has been discovered between the deaths and the total cases of sickness from those diseases. It is not necessary to state that proportion here; but I

wish you to understand that this principle holds good through all diseases, though more definitely with regard to zymotic diseases, viz., that a number suffer who do not die. It is by no means certain either that the sickliest die or the fittest survive. It is quite certain, however, that all who are attacked by the diseases which kill are so much the worse for the attack—some, perhaps, almost imperceptibly, but the majority perceptibly—and not a few spoiled for all the more active purposes of life. If only those born feeble and sickly were attacked by disease, and only the feeble and sickly died, *then*, from a point of view not more elevated than that of a breeder of stock, one *might* say that the weeding out of the sickly and feeble was an advantage to the remainder. But this is not the way the problem works. The Angel of Death does not pass through the land to smite the sick and feeble only, passing over the healthy and vigorous. The true procession of events is that all are equally subjected to a number of conditions hostile to health and life; that some die; some do not die, but are maimed for ever; some have the seeds of future disease planted in them; and very few, if any, escape altogether. A population born and reared amidst conditions hostile to infant life is not in any sense a picked or weeded population, but a damaged and degenerating population, which is only saved from extinction by the constant influx of vigorous lives from healthier districts. I hope you will none of you allow the shallow views to which I have briefly referred to slacken your interest in the physical salvation of the little ones. Be assured that these views are not only heretical from a scientific point of view, but as unworthy of a pure and loving heart as they are of a clear and wise head.

Let us now look into some of the causes of undue infant mortality, and let us begin at the very beginning. I like to begin as near the beginning as possible, because unless one does so one doesn't really bottom a subject. And I should begin by asking a question. "Do men gather grapes of thorns, or figs of thistles?" Certainly not. A tree is known by its fruits, and the same may be said of human beings. As is the parent, so, to a very great extent, will be the child. An immense responsibility rests upon us all in this matter, and most urgently and heavily it rests upon those who are just entering upon manhood and womanhood. I would ask all such to remember that they are the fathers and mothers of the coming generation. Every excess, of whatever kind, every sin against one's own body, all immoral indulgences, record themselves indelibly upon us. Whatever evil they work upon us in our own persons, they work still more certainly and



virulently upon our offspring. To the outward eye the adult may appear robust who has drawn heavily upon his stock of vitality by debauchery, but his children will be puny in body or defective in mind, or perhaps both, and early old age will sharply remind him of the sins of his youth.

It is not convenient in a mixed audience to enter upon a full account of all that might be urged against indulgence in propensities which war against the body as well as the soul, but you may take it from me, without going into details, that the sexual sins of parents are a very large factor in the mortality of little children. If the functions and powers which Providence has given us are perverted to the base uses of mere animalism, a swift and terrible retribution awaits us—our tenderest and best emotions are made the instruments of our own punishment, and our dead children rise up in judgment against us. It is certain that a very small proportion of the children who die of constitutional diseases due to the vices of their parents are certified as so dying, from the reluctance of medical men to label their patients, but with all this allowance, 1,300 children were returned openly, in 1871, as dying of disease of which it is a shame even to speak. What the real number is will probably never be known, but that it reaches shocking dimensions is well known to every medical practitioner in large towns. Probably the great bulk of the infants (25,000 to 26,000) dying of what, for the sake of euphemism, is called in the certificates “atrophy,” “debility,” or “tabes messenterica,” and the 9,500 who are returned as prematurely born, and not a few of those returned in other and equally vague ways, really were victims of a disease which ought not to exist at all, and which above all other diseases is preventible, and an evidence not merely of neglect or ignorance, but of active and deliberate wickedness.

The sin of drunkenness is another parental fault which entails disease and death upon unborn generations. Not to mention the dire effects in somewhat later years of drunkenness in the parent—which expresses itself in the child as it grows up in the form of epilepsy, idiocy, mania, and dipsomania—it is familiar to us medical practitioners that the children of drunkards are prone to hydrocephalus (water on the brain), convulsions, and a whole tribe of diseases of a low type, showing general degeneracy and a special predisposition to brain mischief. If anyone wants proof that the laws of nature are the laws of God, he will find in the mortality of infants ample illustration of the truth that the sins of the fathers are visited upon the children (literally) unto the



third and fourth generations. There is a peculiar significance, too, in the fact—which has been proved on a large scale—that drunkenness tends, after producing in its fatal course through each succeeding generation, mania, melancholy, paralysis, and suicide, to end in complete idiocy and extinction of the family in the fourth generation. How many innocent but enfeebled lives go down before the final obscuration and destruction of the stock it may be painful, but will certainly be useful, to reflect upon, if from the reflection we can lay to our hearts an effectual warning against sensual pleasures in any and every form.

There is yet another class of influences affecting adults, and through them their offspring, in the shape of unwholesome and debilitating occupations. The means whereby these influences may be mitigated are quite as much within the sphere of the operations of trades unions as many other objects more earnestly pursued, and certainly not of more importance. Those who are engaged in what are called unhealthy trades owe it to themselves and to their offspring to insist upon the utmost being done to mitigate their evil effects. It is a melancholy sight to an outsider who takes a friendly interest in the welfare of the working classes to see a great trade paralysed, and hundreds of homes stinted for many weeks, upon a question of a halfpenny an hour in wages, while at the same time the most flagrantly deleterious conditions of the workshop, the factory, and the mine are quietly submitted to. It is some satisfaction to know that these questions are not altogether ignored now, as they formerly were; but what I wish to point out is, that questions of this kind are far too much subordinated to mere money questions, and that, as I observed some time ago, the remedy is in your own hands. Imperial legislation, like local legislation, is now under the control of the people, using the word in its widest sense. Opinions are divided as to the wisdom of the steps which have been taken in this country to elevate the weekly wages class into the dominant class; but, wisdom or no wisdom, the thing is done, and it only remains now for you to use your power wisely. If the working classes of this country are determined that noxious trades shall be so regulated as to reduce their evil influences upon those working at them to a minimum, there is no power in this realm that can say them nay. You are coaxed and flattered by political showmen of both parties, who are all anxious to make you believe that "Codlin's the friend, not Short." Make them prove their friendliness by initiating or supporting measures for a strict sanitary supervision of unwholesome trades, and if they do not obey your mandate send them to the right-about.

So much for the influence of the personal habits and physical health of the parents upon the offspring. It may all be summed up very shortly in this way: Every sin against your own bodies will be recorded against you in the bodies of your children; and not only so, but the constitutional injury will be intensified, and will tend mainly to kill your children in early infancy.

Let us turn now from the diseases and diseased tendencies impressed upon the child by the parents, and consider the child itself and the adverse external conditions which surround it in its first year.

You will remember that I told you that in the last census year 125,868 children under one year of age died. The Registrar-General classes the diseases of which these children died under no less than 116 distinct heads, and these are capable of still further sub-division. Speaking as a physician, I do not entirely concur with the Registrar-General's principles of classification; neither do I think that the certificates of the cause of death given by medical practitioners are as accurate as they ought to be and might be; but as a sanitarian, I am quite sure that the Registrar-General's figures are accurate enough to enable us to point out with unerring finger which are the sickly populations, and, consequently, where there is room for good sanitary work. As indicators of the condition of a population, there can be no reasonable doubt upon anyone's mind, who knows what such figures are capable of proving, and what they profess to prove, that the Registrar-General's statistics are not only invaluable, but that without them we should be at a positive standstill, without a basis to operate upon, or a text to preach from.\*

*\* Causes of Death under one year of age in England and Wales, 1871 :—*

Smallpox .....	3,161	Syphilis.....	1,317
Measles.....	1,862	Privation .....	2
Scarlet Fever .....	1,206	Want of Breast Milk.....	1,174
Diphtheria .....	247	Purpura and Scurvy .....	78
Croup .....	569	Thrush .....	1,081
Whooping-cough .....	4,308	Worms .....	9
Fever.....	460		
Erysipelas .....	716		2,344
Influenza .....	94		
Dysentery.....	175		
Diarrhoea.....	15,662	Dropsy .....	296
Cholera.....	357	Cancerum Ovis.....	17
Other Zymotic Diseases .....	48	Mortification .....	44
	28,865		357

Now, out of all these 116 heads under which deaths are classified, 11 of them include four-fifths of the mortality of infants.† If I had found the deaths more evenly distributed among the numerous headings I should have felt much less strongly impressed with the idea that there is room for great reduction in the number

Scrofula .....	647	Kidney Diseases....	62
Tabes Messenterica .....	3,391	Joint Diseases.....	56
Phthisis .....	1,026	Boils .....	126
Hydrocephalus .....	2,638	Ulcer.....	62
	7,702	Skin Disease .....	256
Cephalitis .....	950		444
Apoplexy .....	348	Premature Birth .....	9,650
Paralysis .....	9	Cyanosis .....	490
Epilepsy .....	58	Spina Bifida .....	381
Convulsions.....	20,089	Other Malformations.....	450
Brain Disease .....	262	Teething .....	2,190
	21,716		13,161
Pericarditis .....	8	Atrophy and Debility .....	22,463
Heart Disease .....	77	Fractures and Contusions .....	39
	85	Cut or Stab .....	1
Laryngitis .....	433	Burns and Scalds .....	106
Bronchitis .....	10,811	Poison .....	45
Pleurisy .....	27	Drowning.....	20
Pneumonia .....	7,434	Suffocation .....	1,098
Lung Disease .....	1,424	Other Accidents .....	259
	20,129		1,563
Gastritis .....	64	Murder and Manslaughter .....	147
Enteritis .....	965	Other Violent Deaths.....	8
Peritonitis.....	152	Sudden Deaths, causes not ascer- tained .....	803
Aseites .....	10	Causes not specified or ill defined	2,051
Ulceration of Intestines.....	59		
Stomach Disease .....	339		
Jaundice .....	558		
Liver Disease .....	108		
Other Intestinal Diseases .....	292		
	2,547		
†Smallpox .....	3,161	Bronchitis.....	10,811
Whooping-cough .....	4,308	Pneumonia ..	7,434
Diarrhoea .....	15,662	Premature Birth .....	9,650
Tabes Messenterica .....	3,391	Teething .....	2,190
Hydrocephalus .....	2,638	Atrophy and Debility .....	22,463
Convulsions.....	20,089		

of deaths; but when I find such a terrible massing of the numbers together, I feel sure there is something most radically wrong. We may pursue this idea further. If we make a further selection, we find that six of the heads under which deaths of infants are recorded account for rather more than 68 per cent of all the deaths of infants. Let me try to put it still more plainly, and therefore still more strikingly. Seven out of every ten infants who die in this country die of the following diseases: Diarrhoea, convulsions, atrophy, debility, bronchitis, pneumonia, and premature birth. Now, if it can be made clear why so many die in this way, we are a long way towards stopping the waste. If we first fully comprehend the fact and its grave importance, and then understand the reason why the fact obtains, we are surely on the way for laying hold of the remedy. I cannot believe that the fathers and mothers of our little ones are so indifferent to their sufferings and deaths that, having once realised the existence of a fearful and unnecessary slaughter of innocents, they will not energetically and effectually apply the remedy when it is pointed out.

Let us now take some of the 11 diseases which account for four-fifths of the deaths which take place among infants, and let us see how and why they occur, and how many of them may be prevented.

Smallpox heads the list with 3,161 deaths. It is remarkable how much more numerous the deaths from smallpox are during the first year of life than in any subsequent year. Not only so, but nearly as many deaths from this terrible disease occur during the first year as during the next four, and one-eighth of all the deaths from smallpox occur during the first year. I do not suppose there are so very many more cases of the disease, but the fact is they nearly all die. I never saw a child under one year of age recover from smallpox. I don't say they never do; but my personal experience so far is that if they are well vaccinated they don't have it, and if they have it without being well vaccinated they die. As for the effect of thorough vaccination, I have seen well vaccinated children at the breast with their mothers plentifully broken out, and the children as well as possible, and still being suckled with perfect impunity. The deaths of infants from smallpox are due almost entirely to two causes. First, carelessness in exposing them to the contagion; and secondly, to the neglect of vaccination or its imperfect performance. I am afraid I must charge many people with gross negligence as to exposure to contagion. People who ought to know better run into all kinds of danger from contagious diseases. I have seen young mothers



with their unvaccinated babies going in and out of houses where smallpox was present, and even taking them with them on a visit of condolence where there had been a death in the house from smallpox. Over and over again I have come to know of cases where relatives have flocked to houses, accompanied by their young children, where funerals are taking place of those who have died of smallpox, scarlet fever, and diphtheria, wholly regardless of the danger and folly of such misplaced attentions; and over and over again I have seen the disease carried away and two or three new foci of contagion created in consequence. The very last case of scarlet fever I saw was got by the patient going to sit with a friend who had it. The visitor wasn't wanted—he could do no good—he had no duty to perform—and was therefore better away. The first case of smallpox which was imported into Southport in 1875, from this district, was the result of a similar visit—kindly, perhaps, but worse than useless. Case No. 1 was lying dying of confluent smallpox, and case No. 2, which unhappily found its way to Southport between the dates of the reception of the contagion and the appearance of the eruption, was the consequence. We didn't see the end of that affair until some twenty-seven lives were lost and we had spent between two and three thousand pounds in stamping out the disease, not to mention the ruin of the summer season. Medical officers of health have some curious experiences to relate. One sees people in and out houses in which infection is rife, like “dogs in a fair.” One has heard of the children of a neighbourhood playing at tumbling head over heels on the bedding of a person just dead of smallpox, the case having been carefully concealed from the sanitary authority. It is not a great while ago that accounts were going the round in the newspapers of a large town in Lancashire in which laundresses and dressmakers were described as using the clothes of their customers as coverlets for their relatives, or to lay out their dead relations in—the inmates in both cases having died of scarlet fever. In a very recent report as to the condition of the houses where a good share of the outdoor made army clothing is put together, Mrs. Fairfield, the widow of Lord Herbert's private secretary, says that having called on some poor needlewoman she found a sempstress who had just died from confluent smallpox. Her body was covered with some soldiers' greatcoats which the women had been making. The viewer of the district, *i.e.*, the functionary whose duty it was to handle and examine these clothes before passing them, caught the disease. Professor Tyndall was consulted as to the risk the soldiers incurred in wearing uniforms thus infected, and his reply

was, that causing the soldiers to wear these uniforms would be "at least as murderous as exposing them defenceless to the bullets of an enemy." I could quote you many such cases from the same source showing the lamentable carelessness of people about spreading contagion. It is difficult to conceive what the mental condition of people who do these things can be. In some cases, no doubt, there is a fear of losing work if disease is reported in a house ; in some cases there is an ignorant fatalism which thinks and speaks of the incidence of disease as if it were capriciously inflicted here and there according to the blind impulses of an avenging fate rather than according to the wise dispositions of a merciful God who rules by law, and expects us to obey that law, whether it be His moral law or the physical laws which regulate our health. In yet another class of minds there is a sort of careless hopefulness without the grounds of hope—a feeling that, somehow or other, they will escape, though they do not take the means to escape, a condition aptly described by the poet who wrote—

"All men think all men mortal but themselves."

I am sure, however, that if the intelligent working people of Manchester would study the Registrar-General's Report and the Reports of the Local Government Boards they would speedily recognise how swiftly and surely the infraction of a physical law is followed by the penalty it always exacts sooner or later. No difficulty exists in getting at these books. They are cheap to buy outright, and are in all public libraries ; and I know no class of books more thoroughly interesting—so absorbingly interesting, indeed, as to become positively exciting in the intensity of the thoughts which they suggest, thoughts which are not like the mere vapid imaginings suggested by sensational fiction, but thoughts which bear upon all our nearest and dearest interests, and which indent themselves, as it were, into our minds on account of their intense and overpowering reality.

There is a branch of carelessness to which I have not yet referred as spreading contagion. I mean dirty habits. Wherever a population is dirty in its habits there smallpox multiplies with fatal rapidity. It not only multiplies with greater rapidity, but assumes a more virulent and persistent character. It is not difficult to account for this. "Dirty habits" mean the accumulation of refuse in the widest sense instead of its removal. Cleanliness means the frequent removal and destruction of refuse. Contagious matter, like everything else that is filthy, accumulates amongst dirty people, and is stored up for further use and dis-

tribution in all sorts of unexpected ways. Cleanliness is, on the contrary, the handmaid of health, and by keeping everything in its right place reduces dirt, which is "matter in the wrong place," to a minimum. Neglect of vaccination, however, or an imperfect vaccination, which in some ways is worse than none at all, is responsible for the greater number of deaths from smallpox among infants as well as among people at all other ages. It is a pity that the vaccination question has fallen so much into the hands of those who have only a theoretical acquaintance with the subject. I say this advisedly, because there is really no vaccination question amongst the members of the medical profession. It only exists among persons who have some taste for statistics and a good deal of distaste to anything like compulsion, and who combine these qualities with an overweening confidence in their own judgment. I think, however, it is possible to put the thing into a nutshell.

In the years 1870-1-2 there was an epidemic of smallpox in London, as in other parts of the country. During this period 14,808 patients were treated in the hospitals of the Metropolitan Asylum District. Of these patients 2,763 died, giving a mortality of 19 per cent on those attacked. 11,174 cases occurred among vaccinated persons, and 3,634 among unvaccinated persons. Now the proportion of vaccinated persons in London at that time to unvaccinated persons was nineteen of the former to one of the latter. Now there is no reason whatever to suppose that vaccinated persons resorted to the hospitals in any greater or less numbers than unvaccinated. They would neither resort to the hospital because they had been vaccinated nor stay away because they had not been vaccinated. The determining cause of their resort to the hospital was the fact of their having smallpox, and not anything that had taken place antecedently to taking the disease. People wouldn't stop to select themselves under such circumstances. As there were nineteen times as many vaccinated as unvaccinated persons living in London, there ought to have been, if it is true that vaccination does not protect from smallpox at all, nineteen times as many cases of smallpox among vaccinated persons as there were among unvaccinated. The 3,634 cases of smallpox among unvaccinated persons ought to have been matched by nineteen times as many cases among vaccinated persons, *i.e.*, 69,046, simply because the one class is nineteen times as numerous as the other. But they were not. Only 11,174 cases of vaccinated persons turned up, *i.e.*, only one-sixth of the proper proportion. It follows, then, that six times as many unvaccinated as vaccinated were attacked. And yet there are people who say vaccination



does not protect from smallpox! I don't say that, as it is usually performed, taking an average of good, bad, and indifferent vaccinations altogether, it is an absolute protection; but here is an experiment on a large scale which proves that, striking an average as to the degree of completeness with which the operation has been performed, you are six times as safe from an attack of smallpox when vaccinated as when unvaccinated. But let us go a little further and see what becomes of you when you do get it.

Out of the 3,634 unvaccinated persons who had smallpox 1,628 died, *i.e.*, 45 per cent.

Out of the 11,174 vaccinated persons who had smallpox only 1,135 died, or 10 per cent.

The net result is that you are six times as likely to have smallpox if you are not vaccinated as you are if you are vaccinated, and four and a half times as likely to die when you do get it; or, in other words, you are twenty-seven times safer vaccinated than unvaccinated.

Apply these data to the 3,161 infants who died of smallpox in 1871, and you will find that 3,000 of them were victims to negligence or perversity. The odd 161 were rather more than the debt due to the Destroyer under an average excellence of vaccination.

All that has been said with regard to the means by which smallpox is spread applies to the other contagious diseases. It may be compressed into a comparatively small space, and amounts to this: Be clean, and keep yourselves to yourselves, and all that belongs to yourselves, as long as you have them in your houses; and when you have not get them in your houses still be clean, because you will then be in the best condition to sustain their attack; and, again, keep yourselves to yourselves except where your *duty* to your neighbour outweighs your *duty* to your own household. Don't run into danger when you can do no good; don't run away from it when it is your duty to face it.

Whooping-cough is undoubtedly an infectious disease. How the disease first arises we do not know, but we do know that it is very readily conveyed, and that in a great number of cases it is easy to trace the channel through which it has been conveyed. Some years ago it was introduced into the island of St. Helena by the captain of a ship whose children had the disease on board. He sent their dirty linen on shore to be washed, and the consequence was that whooping-cough was spread through the island, and proved very fatal, a remarkable illustration of the merit of the old French proverb, which says, "One should wash one's dirty



linen at home," though this is not the original application of it. One cannot say, of course, how many of the 4,308 children who died of whooping-cough in 1871 died in consequence of incautious exposure to infection; but as we have no knowledge of its occurring except as propagated from an antecedent case we must draw an inference unfavourable to the carefulness of parents. A great many people must have neglected the golden rule of keeping themselves to themselves, while probably many more did not wash their dirty linen at home.

We now come to a much higher figure than any we have dealt with as yet—15,662 deaths from diarrhœa are on the list for 1871. The enormous preponderance of deaths from this cause in cities and towns, as compared with country districts, and in hot weather as compared with cold, makes it pretty certain that a great portion of it is due to causes which are prone to concur in large towns. If we inquire what are the differences between town and country life, we shall probably find that it comes to something like this: In towns the poorer classes are not only overcrowded in their houses, as they are frequently in rural districts, but the houses are crowded together too. Houses are set too thickly on the ground, and too many people live in each house as well. The houses are not properly ventilated; the refuse of the houses is stored up in close proximity to the houses; the mothers are too often engaged in factory work, and either do not suckle their children at all, or give them milk which has been too long retained in over-distended breasts. The children are more often hand-fed with improper food, or bottle-fed with food from sour bottles, which are seldom thoroughly cleaned. In the country a much larger number of mothers suckle their own children. Cottages, however overcrowded at night, are so situated that the children spend most of the day in fresh open air; and careless as the sanitary arrangements may be, people in the country are not huddled up amongst their own refuse in an endless succession of courts, alleys, and streets. Probably, too, in country places, milk is cheaper and better than in towns, and more available as a substitute for mother's milk, when that fails. Artificial feeding, bad feeding—*i.e.*, food not adapted to the tender stomach and bowels of the infant, such as fermented bread made into a mess with sugar and water, and sour either before it is swallowed or immediately afterwards—kills numbers of infants. The two great causes are deprivation of mothers' milk and poisoning of the air which the children breathe. At certain periods of the year the mortality from diarrhœa in towns suddenly spring up. It is the

period when decomposition of organic matter fills the atmosphere with deleterious gases and low forms of animal and vegetable life.

No better illustration of the effect of the elevation of temperature can be given than the tables of deaths from diarrhœa for 1874, published by the society under whose auspices we are met to-night. In the March quarter of that year 11 deaths were registered in the district watched by the society, in the June quarter 12 deaths, in the September quarter 96, and in the December quarter 30. You see, then, how important it is that your habitations and all their surroundings should be clean, so that there shall be nothing to decompose and fester in the heats of the latter summer. The diarrhœa question among infants is a question of natural food and pure air. The only way to have these is for mothers to suckle their own children, and for householders and municipal authorities to vie with each other as to which shall be most in earnest to secure clean houses and clean premises.

Tabes messenterica is down for 3,391 deaths. This disease is of the same nature, more or less, as hydrocephalus, which is down for 2,638 deaths. The one is a tubercular affection of the glands of the bowels, and the other the result of a similar disease attacking the membranes of the brain. Precisely the same causes bring about these deaths—exposure, bad feeding, under feeding, impure air, bad habits of parents—any or all of the causes which depress vitality in parent or child. It is wonderful in how many ways the same evil conditions of life express themselves.

Convulsions killed 20,089 infants in 1871, and atrophy and debility destroyed 22,463. Numbers of those returned as dying of convulsions were certainly in a state of atrophy and debility, and many of the atrophied were doubtless more or less convulsed. The 9,650 returned as premature births were pretty certainly infants which, if their little lives had flickered on a short time longer, would have withered away in what would have been certified as an atrophy, or would have gone out in a convulsion. The essential history of these deaths is the same; so is the history of the 2,190 who died of teething. Children born of healthy parents, fed with nature's aliment, living in pure air, don't die of teething, nor of convulsions, nor of atrophy.

About 18,000 infants died of pneumonia, *i.e.*, inflammation of the lungs, and of bronchitis. I fear much of this mortality is the result of careless exposure. Parents forget how fragile is the organisation of a young creature—how delicate the skin and the lining of its tender air passages. One constantly meets in mid-winter frail infants of a few weeks' span exposed to the keen blasts

of a January or March east wind, carried about by thoughtless young mothers, who, in the prime of vigorous womanhood, are comparatively insensible to the cold. If the parents of these children would look into the Registrar-General's quarterly returns, they would see how, as the temperature falls, there is an increase of deaths from inflammations of the breathing organs. It is a pity that so little is generally known of the depressing effects of cold upon life. Infants and old people have much less power of generating heat than adults—they are soon robbed of their vital heat. Consider for a moment that plants do not grow on any day following a night in which the temperature has been below 40 deg. Fahrenheit, and then carry the mind on to contemplate the probable parallel effect of a temperature under the freezing point on so tender a being as an infant anywhere under one year of age. If you can once realise the small power of resistance of young children to cold, your children will stand in much less danger of death from chest affections.

I think I have said enough on these subjects to induce you all, at any rate, to think about them. The more you think about them the sooner you will become convinced that if the waste of infant life in this country is to be checked we must all be sober, chaste, and clean. Fathers should be the bread-winners, and mothers the nurses and care-takers of their suckling children. We must all in our several spheres do our duties in our own homes, live so as not to endanger each other's lives, and see that our municipal representatives do their duty in keeping our cities clean. If we are false to our duties in these respects, we must e'en be content to see "canker sorrow eat our buds, and chase the native beauty from their cheeks." When neglect or worse has done its fatal work, grief and remorse will not

" Fill the room up of our absent child,  
Lie in his bed, walk up and down with us,  
Put on his pretty looks, repeat his words,  
Remember us of all his gracious parts,  
Nor fill his vacant garments with his form."

